

CLAIMS

1. A system for treating raw sewage and graywater onboard a marine vessel, comprising: means for receiving, holding, and treating wastewater; plumbing means for discharging clean effluent overboard and discharging sludge concentrate either overboard, into an onboard holding tank or to undergo further onboard treatment; and selective control means for establishing different operational modes based on location of the marine vessel and operating conditions of the system.
2. The system as defined in claim 1, wherein said further onboard treatment includes concentration or destruction.
3. The system as defined in claim 2, including wastewater feed connecting means for enabling collection and temporary holding of raw shipboard wastewater.
4. The system as defined in claim 3, including ultraviolet disinfection means for reducing concentration of fecal coliform bacteria in the wastewater.
5. The system as defined in claim 4, including bioreactor means for reception and holding of the raw shipboard wastewater a sufficient period of time during which naturally present bacteria consumes organic matter to allow filtration; said bioreactor means including a tank having membrane modules and diffusers therein; and aeration means for scouring surfaces of the membrane modules and sustains bacterial population within the tank.

6. The system as defined in claim 5, including vent means connected to the bioreactor means for exiting of air and foam from the tank; and means for collection of the foam from the tank and feedback thereof to the bioreactor means.

7. The system as defined in claim 4, including bioreactor means having a tank within which membrane modules are disposed and associated piping for filtering conditioned wastewater to emit a permeate stream meeting effluent quality thresholds.

8. The system as defined in claim 7, wherein the bioreactor means includes plumbing means connected to the tank for transfer thereto of sludge concentrate and temporarily holding, further concentrating or destroying by thermal means, or discharging overboard therefrom the sludge concentrate.